Amendments to the Claims

Please amend Claim 16. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Previously presented) A method of fabricating a heterojunction bipolar transistor comprising:

growing a base layer comprising gallium, indium, arsenic, and nitrogen over an n-doped GaAs collector from a gallium, indium, arsenic, and nitrogen source, wherein the base layer is p-doped with carbon from an external carbon source to thereby have a carbon-dopant concentration in a range of between about $1.5 \times 10^{19} \text{ cm}^{-3}$ to about $7.0 \times 10^{19} \text{ cm}^{-3}$; and

growing an n-doped emitter layer over the base layer.

- 2. (Original) The method of Claim 1, wherein the external carbon source is carbon tetrabromide or carbon tetrachloride.
- 3. (Original) The method of Claim 2, wherein the gallium source is selected from trimethylgallium and triethylgallium.
- 4. (Original) The method of Claim 3, wherein the nitrogen source is ammonia or dimethylhydrazine.
- 5. (Original) The method of Claim 4, wherein the ratio of the arsenic source to the gallium source is about 2.0 to about 3.5.
- 6. (Original) The method of Claim 5, wherein the base is grown at a temperature of less than 750°C.

- 7. (Original) The method of Claim 6, wherein the base is grown at a temperature of about 500°C to about 600°C.
- 8. (Original) The method of Claim 6, wherein the base layer comprises a layer of the formula $Ga_{1-x}In_xAs_{1-y}N_y$, wherein x and y are each, independently, about 1.0×10^{-4} to about 2.0×10^{-1} .
- 9. (Original) The method of Claim 8, wherein x is about equal 3y.
- 10. (Previously presented) The method of Claim 8, wherein the collector is GaAs and the emitter is InGaP, AlInGaP, or AlGaAs and the transistor is a double heterojunction bipolar transistor.
- 11. (Original) The method of Claim 8, further comprising the step of growing an n-doped first transitional layer over the collector and disposed between the base and the collector, wherein the first transitional layer has a graded band gap or a band gap that is smaller than the band gap of the collector.
- 12. (Original) The method of Claim 11, wherein the first transitional layer is selected from the group consisting of GaAs, InGaAs, or InGaAsN.
- 13. (Previously presented) The method of Claim 12, further comprising the step of growing a second transitional layer over the base, wherein the second transitional layer has a first surface contiguous with a surface of the base and a second surface contiguous with a surface of the emitter, and wherein the second transitional layer has a doping concentration at least one order of magnitude less than the doping concentration of the emitter.
- 14. (Original) The method of Claim 13, wherein the second transitional layer is selected from the group consisting of GaAs, InGaAs, or InGaAsN.

- 15. (Original) The method of Claim 14, wherein the first transitional layer, the second transitional layer, or both the first and the second transitional layer have a doping spike.
- 16. (Currently amended) The method of Claim 14, further comprising the step of growing a latticed lattice matched layer over the collector, wherein the lattice matched layer has a first surface contiguous with a first surface of the collector and a second surface contiguous with a second surface of the first transitional layer.
- 17. (Original) The method of Claim 16, wherein the lattice matched layer is InGaP.